A Key to the Australian Genera of the Agaricales

A. E. WOOD

WOOD, A. E. A key to the Australian genera of the Agaricales. *Proc. Linn. Soc. N.S.W.* 103 (4), (1978) 1979: 255-273.

A key is provided to the genera of Agaricales found in Australia. The limits of the genera are those outlined by Singer, and most of the diagnostic characters have been incorporated in the key.

A. E. Wood, School of Botany, University of New South Wales, P. O. Box 1, Kensington, Australia 2033; *manuscript received 16 May 1978, accepted 21 February 1979.*

INTRODUCTION

In recent years there have been great developments in the concepts of genera in the Agaricales. However, there has been little work carried out to apply these new concepts to the local agaric flora. This paper is an attempt to do this. The generic concepts used have been those of Singer (1975). In a few cases the generic limits are wider than those accepted by Singer. In almost all of these cases, the wider sense follows the use of British Check List (Dennis, Orton and Hora, 1960). The genera which have been included in other genera are as follows:

Anellaria is included in *Panaeolus*
Armillariella is included in *Armillaria*
Copelandia is included in *Panaeolus*
Galerella is included in *Conocybe*
Gerronema is included in *Mycena* and *Omphalina*
Tectella is included in *Panellus*.

Lentinellus and *Schizophyllum* are still included, despite their exclusion from the order by Singer. This conclusion is not universally accepted and for convenience they are still included in the key.

In recent years I have collected and studied the local species and compared them with the genera accepted by Singer. In no case so far has it been necessary to propose a new genus. The genera included in the key are those that have been found in Australia together with those genera that may possibly occur here but have not so far been recorded. In this latter category are included large cosmopolitan genera and other genera where the distribution almost certainly includes Australia. Most of the collecting has been carried out in New South Wales, but there is reason to believe that the key will prove satisfactory for most of Australia.

The key is based on the concepts outlined in Singer (1975) and Dennis, Orton and Hora (1960) and is dichotomous, with several genera being keyed out several times. Spore colours unless otherwise stated, refer to the colour of a spore print. Where possible, macroscopic features have been used, to allow the key to be used in the field.

KEY

1a.	Fruit body lamellate	2
1b.	Fruit body soft, poroid (tough to woody species, see Polyporaceae)	147
2a.	(1) Lamellae narrow, fragile or flexible, crowded (space between lamellae < four times thickness of lamella); spore colour variable	9

2b.	Lamellae very thick, waxy, distant (space between lamellae > four times thickness of lamella); spore colour mostly white	 3
3a.	(2) Spores brown, smooth, elongate; cystidia present, usually large and encrusted; basidia not very elongate (ℓ/d<6)	*Gomphidius*
3b.	Spores white, smooth or rough, non-amyloid; basidia elongate or not	 4
4a.	(3) Basidia not very elongate (ℓ/d<6); spores smooth or rough	 5
4b.	Basidia elongate (ℓ/d>6); spores smooth	 6
5a.	(4) Spores elongate, smooth; cap margin grooved; pigment present that turns green in alkali	*Anthracophyllum*
5b.	Spores globose, spiny; cap margin smooth; no unusual pigment present	*Laccaria*
6a.	(4) Lamellae shallow, decurrent, anastomosing or reduced	*Cantharellus** (Cantharellaceae)
6b.	Lamellae well developed, decurrent or not, not anastomosing	 7
7a.	(6,42) Lamellar trama distinctly bilateral; cap viscid; lamellae usually decurrent; stipe apex usually rough with dots; veil often present	*Hygrophorus*
7b.	Lamellar trama not bilateral	 8
8a.	(7) Lamellar trama strongly interwoven; lamellae often decurrent; fruit body not bright red or bright yellow; cap never viscid; stipe smooth	*Camarophyllus*
8b.	Lamellar trama regular, mostly of wide hyphae; lamellae decurrent or not; colour of fruit body usually bright red or bright yellow; cap often viscid; stipe smooth	*Hygrocybe*
9a.	(2) Flesh soft, fibrous; spores of various colours, amyloid, dextrinoid or non-amyloid	 11
9b.	Flesh granular (containing sphaerocysts); spores white to pale buff, amyloid, ornamented	 10
10a.	(9) Cap with latex when broken; intermediate lamellae always present	*Lactarius*
10b.	Latex absent; intermediate lamellae mostly absent	*Russula*
11a.	(9) Stipe central	 28
11b.	Stipe eccentric, lateral or absent	 12

* This is not a true agaric, but it is included because of superficial similarity which might cause it to be confused with this group.

12a.	(11) Spores mainly white or pale brown; almost always on wood	 14
12b.	Spores pink or purple;	 13
13a.	(12) Spores purple; cuticle filamentous, gelatinized; on wood	*Melanotus*
13b.	Spores pink and *either* polygonal *or* with ridges	 90
14a.	(12) Fruit body soft and fleshy	 15
14b.	Fruit body tough and leathery	 23
15a.	(14) Spores pinkish-brown to ochre-brown	 16
15b.	Spores white, non-amyloid	 17
16a.	(15) Spores pinkish-brown to clay-brown; lamellae not anastomosing; trama ><* regular	*Crepidotus*
16b.	Spores cigar-brown to ochre-brown; lamellae decurrent >< anastomosing, readily separated from cap flesh; trama bilateral; sometimes on the ground	*Paxillus*
17a.	(15) Gelatinized layer in flesh; encrusted, thick-walled marginal cystidia present	*Hohenbuehelia*
17b.	No gelatinized layer in flesh; ± cystidia of various types	 18
18a.	(17) Cap surface with stiff dextrinoid hairs; thin or thick-walled cystidia present; fruit body sessile, with constricted base	*Chaetocalathus*
18b.	Cap surface of unspecialized hyphae	 19
19a.	(18) Fruit body resupinate; thick-walled cystidia absent	*Resupinatus*
19b.	Fruit body sessile or stipe eccentric	 20
20a.	(19) Lamellae distant (space between lamellae > four times thickness of lamella); cap margin grooved; spores cylindric; cystidia absent; pigment present that turns green in alkali	*Anthracophyllum*
20b.	Lamellae crowded (space between lamellae < four times thickness of lamella); cap smooth	 21
21a.	(20) Spores ellipsoid to cylindric; stipe eccentric, rarely absent; >< thick-walled cystidia present	*Pleurotus*
21b.	Spores sub-globose	 22
22a.	(21) Fruit body sessile; thin-walled cystidia present or absent; cap thin	*Nothopanus*
22b.	Stipe eccentric; cystidia absent; cap fleshy, luminescent	*Omphalotus*

* >< = more or less.

23a.	(14) Lamellae splitting longitudinally	*Schizophyllum*
23b.	Lamellae not splitting	 24
24a.	(23) Margin of lamellae entire	 25
24b.	Margin of lamellae serrate	 27
25a.	(24) Spores amyloid; cystidia absent	*Panellus*
25b.	Spores non-amyloid	 26
26a.	(25) Cystidia present; lamellae crowded	*Panus*
26b.	Cystidia absent; lamellae distant; cap margin grooved	*Anthracophyllum*
27a.	(24) Spores non-amyloid, cystidia absent	*Lentinus*
27b.	Spores amyloid, cystidia present	*Lentinellus*
28a.	(11) Spores white or pale green or pale pink	 29
28b.	Spores deep pink	 90
28c.	Spores rust, clay or cigar brown (not chocolate)	 98
28d.	Spores chocolate, cocoa brown, purple or black	 138
29a.	(28) Stipe with *either* volva, volval remains *or* bulbous base *and/or* a distinct annulus (at least in young specimens)	 30
29b.	Stipe with *neither* volva *nor* annulus	 41
30a.	(29) Stipe with *either* volva, volval remains *or* bulbous base; annulus mostly present; spores amyloid or not, never dextrinoid	*Amanita*
30b.	Stipe with no volval remains, but with a distinct annulus	 31
31a.	(30) Lamellae adnate to decurrent	 32
31b.	Lamellae free; fruit body normally on the ground	 35
32a.	(31) Cap cuticle filamentous; fruit body normally on wood	 33
32b.	Cap cuticle cellular or with a covering of cellular granules; fruit body mostly on the ground	 34
33a.	(32) Cap smooth or with small scales	*Armillaria*
33b.	Cap with prominent, large, erect, conical warts	*Cyptotrama*
34a.	(32) Cap mostly viscid; cap cuticle cellular; large cystidia present	*Oudemansiella*
34b.	Cap not viscid; cap and stipe with a covering of spherical cells in granules; cystidia not prominent	*Cystoderma*
35a.	(31) Cap viscid; lamellar trama bilateral; spores small, sub-globose, non-amyloid	*Limacella*
35b.	Cap dry; lamellar trama never bilateral; spores dextrinoid	 36
36a.	(35) Lamellae and spores >< green	*Chlorophyllum*
36b.	Spores white	 37

37a.	(36,53) Spores metachromatic in cresyl blue, with prominent germ pore; cap fleshy or membranous	 38
37b.	Spores not metachromatic in cresyl blue, without prominent germ pore; cap fleshy	 40
38a.	(37) Disc of cap with palisade structure; clamp connections present; cap large, fleshy; spores without metachromatic plug	*Macrolepiota*
38b.	Disc of cap without palisade structure; clamp connections absent	 39
39a.	(38) Cap large, fleshy; spores without metachromatic plug	*Leucoagaricus*
39b.	Cap membranous; spores with metachromatic plug	*Leucocoprinus*
40a.	(37) Cuticle cellular but not a palisade; spores with thin walls; clamp connections present or absent; cystidia usually present	*Lepiota*
40b.	Cuticle flat filamentous; spore walls somewhat thickened; clamp connections absent; cystidia absent	*Pseudobaeospora*
41a.	(29) Lamellae >< strongly decurrent	 42
41b.	Lamellae not strongly decurrent	 53
42a.	(41) Lamellae thick; basidia very long (ℓ/d>6)	 7
42b.	Lamellae thin; basidia not unusually long	 43
43a.	(42) Spores non-amyloid or dextrinoid	 44
43b.	Spores amyloid	 50
44a	(43) Spores smooth	 45
44b.	Spore wall rough, uneven or heterogeneous	 48
45a.	(44) Small species (cap diameter usually < 2 cm); stipe often tough to cartilaginous; lamellar trama irregular; clamp connections present or absent	*Omphalina*
45b.	Large species (cap diameter usually > 2 cm) stipe typically fleshy; lamellar trama regular or irregular; clamp connections present	 46
46a.	(45) Lamellae repeatedly forked	*Hygrophoropsis*
46b.	Lamellae not forked	 47
47a.	(46) Fruit body bright yellow to orange, luminescent; lamellar trama irregular to >< regular; on wood	*Omphalotus*
47b.	Fruit body not bright coloured, not luminescent; lamellar trama >< regular; mostly on the ground	*Clitocybe*
48a.	(44) Spores with heterogeneous or uneven walls; cystidia present; fruit body drab coloured	*Fayodia*

48b. Spores distinctly spiny; cystidia absent 49
49a. (48) Spores white to cream *Clitocybe*
49b. Spores pink *Lepista*
50a. (43) Stipe tough, with yellow to rust basal mycelium; fruit body somewhat reviving; spores smooth, thin-walled; cystidia present; on wood or humus *Xeromphalina*
50b. Stipe more fleshy; basal mycelium not coloured; fruit body not reviving; cystidia present or absent 51
51a. (50) Cystidia absent; spores short-ellipsoid to sub-globose, smooth, thin-walled; on wood *Clitocybula*
51b. Cystidia present; on wood or on the ground 52
52a. (51) Spores with smooth, simple wall, ellipsoid to short-cylindric; on wood *Clitocybula*
52b. Spores with thick, more or less uneven, wall, >< subglobose; on wood or on the ground; cuticular hyphae sometimes gelatinized *Fayodia*
53a. (41) Lamellae free; spores dextrinoid 37
53b. Lamellae free, adnate or sinuate; spores not dextrinoid (rarely dextrinoid and then lamellae not free) 54
54a. (53) Cap and stipe with a covering of granules consisting of spherical cells; spores amyloid, non-amyloid or dextrinoid *Cystoderma*
54b. Cap and stipe without a cellular covering 55
55a. (54) Lamellae adnate; spores thick walled, dextrinoid, without germ pore; stipe fleshy, without annulus; cap fleshy, smooth, viscid; cuticle filamentous *Hebelomina*
55b. Spores not dextrinoid; lamellae free, adnate or sinuate 56
56a. (55) Spores rough (or at least heterogeneous) 57
56b. Spores smooth 64
57a. (56) Spores amyloid 58
57b. Spores non-amyloid 59
58a. (57) Hyphae without clamp connections; large pointed marginal cystidia, with crystal coated apex present (may be rare); cuticle filamentous; spores with plage; fruit body usually fleshy with sinuate lamellae *Melanoleuca*
58b. Hyphae with clamp connections; prominent cystidia absent; cuticle filamentous; spores without plage; fruit body usually fleshy with sinuate lamellae *Leucopaxillus*

59a.	(57) Lamellae thick, distant, (space between lamellae > four times thickness of lamella), broadly adnate; cuticle filamentous; spores without plage; basidia without carminophile granules	*Laccaria*
59b.	Lamellae thin, crowded (space between lamellae < four times thickness of lamella), often sinuate; spores without plage	 60
60a.	(59) Cuticle cellular, usually above a gelatinous layer; large prominent cystidia present; lamellae attached; clamp connections mostly present	*Oudemansiella*
60b.	Cuticle filamentous; cystidia absent or present (and then not very large); clamp connections present	 61
61a.	(60) Basidia without carminophile granules	 62
61b.	Basidia with carminophile granules; spores white	 63
62a.	(61) Spores pale pink; spore wall thin, coarsely to finely roughened	*Lepista*
62b.	Spore print white; spore wall thick, heterogeneous or uneven	*Fayodia*
63a.	(61) Fruit body grey	*Lyophyllum*
63b.	Fruit body bright coloured (rarely white)	*Calocybe*
64a.	(56) Spores amyloid	 65
64b.	Spores non-amyloid	 71
65a.	(64) Cystidia rare or absent	 66
65b.	Cystidia present, conspicuous	 69
66a.	(65) Fruit body large (cap diameter usually > 2 cm), fleshy, on the ground; lamellae often sinuate	 67
66b.	Fruit body small (cap diameter usually < 2 cm), on wood	 68
67a.	(66) Hyphae with clamp connections	*Leucopaxillus*
67b.	Hyphae without clamp connections	*Melanoleuca*
68a.	(66) Lamellae well developed	*Clitocybula*
68b.	Lamellae mostly reduced to veins; fruit body white, fragile	*Delicatula*
69a.	(65) Fruit body with large pointed marginal cystidia with crystal coated apex (may be rare); hyphae without clamp connections; fruit body mostly large, fleshy; lamellae usually sinuate	*Melanoleuca*
69b.	Fruit body with conspicuous or inconspicuous cystidia, but these never crystal coated; hyphae with clamp connections	 70
70a.	(69) Cystidia not conspicuous; fruit body mostly large (cap diameter usually > 2 cm), fleshy; lamellae often sinuate	*Leucopaxillus*

70b.	Conspicuous cystidia present; fruit body mainly small (cap diameter usually < 2 cm), cap conical; lamellae ascending, >< free	*Mycena*
71a.	(64) Cap cuticle normal filamentous, without hairs or cystidia	72
71b.	Cap cuticle diverticulate to cellular, or filamentous with hairs or cystidia	80
72a.	(71) Stipe fleshy; fruit body mostly large (cap diameter usually > 2 cm); lamellae typically sinuate	73
72b.	Stipe tough; fruit body seldom large; lamellae typically adnate	76
73a.	(72) Cystidia present, marginal, >< globose; on wood	*Tricholomopsis*
73b.	Cystidia inconspicuous or absent; usually on the ground	74
74a.	(73) Baidia without carminophile granules; cystidia absent	*Tricholoma*
74b.	Basidia with carminophile granules	75
75a.	(74, 77) Fruit body grey (rarely white, and then basidia long)	*Lyophyllum*
75b.	Fruit body bright coloured (when white, basidia not long)	*Calocybe*
76a.	(72) Gloeocystidia present	*Lactocollybia*
76b.	Gloeocystidia absent	77
77a.	(76) Basidia without carminophile granules	78
77b.	Basidia with carminophile granules	75
78a.	(77) Stipe not insititious; cuticle not gelatinized; fruit body not reviving	*Collybia*
78b.	Stipe insititious; cuticle gelatinized or not; fruit body reviving	79
79a.	(78) Cuticle gelatinized *or* stipe with black rhizomorphs; odour usually unpleasant	*Micromphale*
79b.	Cuticle usually not gelatinized; rhizomorphs absent; odour not unpleasant	*Marasmiellus*
80a.	(71) Cap cuticle filamentous	81
80b.	Cap cuticle diverticulate to cellular	83
81a.	(80) Cap with long stiff hairs; fruit body fragile, mostly white; cap dry	*Crinipellis*
81b.	Cap with cystidia	82
82a.	(81) Cap with large cystidia (length up to 60 μm); fruit body large (cap diameter usually > 2 cm), coloured; on wood; cap viscid	*Flammulina*
82b.	Cap with small cystidia (length up to 30 μm); fruit body small (cap diameter usually < 2 cm) delicate, white; cap >< hygrophanous	*Hemimycena*

83a.	(80) Fruit body small (cap diameter usually < 2 cm), white, non-reviving; lamellae with no marginal cystidia; cap cuticle diverticulate	*Hemimycena*
83b.	Fruit body not combining these characters	 84
84a.	(83) Cap cuticle cellular to sub-cellular	 85
84b.	Cap cuticle nodulose to diverticulate	 88
85a.	(84) Cystidia inconspicuous or absent; basidia with carminophile granules; fruit body not reviving	*Calocybe*
85b.	Conspicuous cystidia present; basidia without carminophile granules	 86
86a.	(85) Fruit body not reviving; stipe fleshy; sub-cuticular layer of cap usually gelatinous	*Oudemansiella*
86b.	Fruit body reviving or not; stipe tough to cartilaginous; sub-cuticular layer of cap not gelatinous	 87
87a.	(86) Fruit body reviving; cap cuticle without cystidia; cells of cuticle smooth or rough to irregular; clamp-connections mostly present	*Marasmius*
87b.	Fruit body not reviving; cap cuticle with cystidia; cells of cuticle regular, smooth; clamp-connections absent	*Pseudohiatula*
88a.	(84) Stipe not insititious; fruit body not reviving; marginal cystidia present or absent, not conspicuous	*Collybia*
88b.	Stipe insititious; fruit body usually reviving; marginal cystidia mostly present	 89
89a.	(88) Stipe tough but not cartilaginous; cap cuticle diverticulate but not rough	*Marasmiellus*
89b.	Stipe thin, cartilaginous; cap cuticle diverticulate and roughened	*Marasmius*
90a.	(13, 28) Stipe eccentric, lateral or absent *and* spores ribbed	*Clitopilus*
90b.	Stipe usually central	 91
91a.	(90) Spores polygonal, smooth; lamellae not free; cap and stipe not separable; mostly on soil	*Rhodophyllus*
91b.	Spores smooth or rough, not polygonal (if somewhat angular then also rough)	 92
92a.	(91) Spores rough; lamellae not free; cap and stipe not separable	 93
92b.	Spores smooth	 94
93a.	(92) Clamp connections absent; cystidia present or absent; cuticle >< parallel filamentous; spores ovoid to somewhat angular	*Rhodocybe*
93b.	Clamp connections present; cystidia absent; cuticle interwoven filamentous; spores ovoid	*Lepista*

94a.	(92) Large, elongate, thin-walled, hyaline cystidia on lamellae and cap surface (length up to 60 μm); lamellae sub-free; cap and stipe not easily separable	*Macrocystidia*
94b.	Large cystidia absent; lamellae free; cap and stipe easily separable	 95
95a.	(94) Well developed cup shaped volva present; on the ground or wood	 96
95b.	Volva absent; lamellar trama inverse; spores non-amyloid	 97
96a.	(95) Lamellar trama inverse; spores non-amyloid; on the ground or wood	*Volvariella*
96b.	Lamellar trama bilateral; spores amyloid; on the ground	*Amanita*
97a.	(95) Annulus present	*Chamaeota*
97b.	Annulus absent	*Pluteus*
98a.	(28, 114) Fruit body fragile, soon decaying; cap viscid, striate or pleated; cuticle cellular; cystidia not abruptly capitate; lamellar trama regular; stipe with no brown pigment towards base; spores rust-brown, occasionally dull-brown	*Bolbitius*
98b.	Fruit body not delicate, fragile	 99
99a.	(98) Stipe with membranous ring at maturity	 100
99b.	Stipe with cobweb partial veil or veil absent (cobweb partial veil, when present, mostly only visible in young stages, adult specimens may show fine fibrillar remains on stipe)	 108
100a.	(99) Cuticle filamentous	 101
100b.	Cuticle cellular	 106
101a.	(100) Spores smooth	 102
101b.	Spores rough	 105
102a.	(101) Lamellae thick, distant (space between lamellae > four times thickness of lamella), decurrent, often waxy; spores elongate, without germ pore; cystidia present, usually large and encrusted (length up to 60 μm); cap mostly viscid	*Gomphidius*
102b.	Lamellae thin, crowded (space between lamellae < four times thickness of lamella), not waxy, rarely decurrent	 103
103a.	(102) Spores truncate, with prominent germ pore; chrysocystidia absent; cap hygrophanous, not scaly; mainly on wood	*Kuehneromyces*
103b.	Spores without prominent germ pore; chrysocystidia present or absent	 104

104a.	(103) Mainly on wood; stipe mostly >< scaly; lamellae not decurrent; spores ovoid or non-ovoid; chrysocystidia often present; cap not hygrophanous; fruit body usually large, fleshy (cap diameter usually > 3 cm.)	*Pholiota*
104b.	Mainly on the ground; cap or stipe not scaly; chrysocystidia absent; spores ovoid; fruit body mostly small (cap diameter usually < 3 cm)	*Galerina*
105a.	(101) Fruit body large (cap diameter usually > 3 cm), fleshy; spores without plage; veil *either* double, forming annulus on upper part of stipe and annulus or belts on lower part of stipe *or* single	*Rozites*
105b.	Fruit body mostly small (cap diameter usually < 3 cm), fragile, striate; spores with plage; veil single	*Galerina*
106a.	(100) Spores rust-brown, smooth, with germ pore; cystidia not abruptly capitate	*Pholiotina*
106b.	Spores buff-brown; cystidia not abruptly capitate	 107
107a.	(106) Spores smooth, with germ pore	*Agrocybe*
107b.	Spores rough, without germ pore, without plage	*Descolea*
108a.	(99) Cuticle cellular or sub-cellular or with abundant cystidia; mostly small species (cap diameter usually < 3 cm); spores smooth or rough	 109
108b.	Cuticle filamentous, without cystidia; small or large species; spores smooth or rough	 117
109a.	(108) Spores rust-brown to cigar-brown	 110
109b.	Spores chocolate-brown	 141
110a.	(109) Cuticle strictly cellular, with or without cystidia; spores smooth, with prominent germ pore; cystidia >< abruptly capitate	 111
110b.	Cuticle sub-cellular, with or without cystidia; spores smooth or rough, without prominent germ pore; cystidia not abruptly capitate	 115
111a.	(110) Spores cigar-brown; cystidia not abruptly capitate; cap without cystidia, convex to flattened	*Agrocybe*
111b.	Spores rust-brown	 112
112a.	(111) Cystidia abruptly capitate; stipe brown towards the base; cap without cystidia	*Conocybe*
112b.	Cystidia not abruptly capitate	 113

113a. (112) Stipe brown towards the base; cystidia often present on cap — *Pholiotina*

113b. *Either* stipe white to the base *or* cuticle not strictly cellular 114

114a. (113) Stipe white to the base; spores with germ pore 98

114b. Stipe coloured; germ pore inconspicuous or absent; cystidia often present on cap 115

115a. (110, 114) Spores rough, cigar-brown; cap cuticle >< a layer of cystidia or >< cellular — *Alnicola*

115b. Spores smooth, cigar-brown or rust-brown 116

116a. (115, 124) Fruit body hygrophanous; spores cigar-brown; cap cuticle a layer of cystidia — *Simocybe*

116b. Fruit body non-hygrophanous; spores rust-brown; cap cuticle of broad elongate cells, heavily encrusted, often in chains — *Phaeomarasmius*

117a. (108) Spores smooth 118

117b. Spores rough or nodulose (this may need to be determined under oil immersion) 132

118a. (117) Spores clay-brown or cigar-brown or grey-brown 119

118b. Spores rust-brown 120

119a. (118) Spores clay-brown or cigar-brown; chrysocystidia seldom present 124

119b. Spores some shade of grey-brown; chrysocystidia often present 141

120a. (118, 131) Spores truncate, with prominent germ pore; chrysocystidia absent; fruit body hygrophanous; lamellae not free — *Kuehneromyces*

120b. Spores not truncate, without prominent germ pore (narrow indistinct pore may be present in some cases) 121

121a. (120) Spores thin-walled, often collapsing in water, >< hyaline *sub. micr.* 122

121b. Spores usually not collapsing in water, coloured *sub. micr.* 123

122a. (121) Clamp connections present; lamellae broadly adnate to sub-decurrent; marginal cystidia narrow; facial cystidia absent — *Tubaria*

122b. Clamp connections absent; lamellae ascending, >< free; cap conic to hemispherical, normally striate; marginal cystidia narrow; facial cystidia present — *Galerina*

123a. (121) Fruit body mostly medium to large (cap diameter usually > 3 cm); cap ><

	convex; lamellae usually attached; *either* cap scaly *and/or* chrysocystidia present *and/or* spores non-ovoid	*Pholiota*
123b.	Fruit body mostly small (cap diameter usually < 3 cm); cap >< conical; lamellae ascending, >< free; cap not scaly; chrysocystidia absent	*Galerina*
124a.	(119) Cap cuticle filamentous, of the normal type	 125
124b.	Cap cuticle of >< barrel-shaped cells or chains of broad elongate cells	 116
125a.	(124) Lamellae decurrent; lamellar trama bilateral	 126
125b.	Lamellae rarely decurrent; lamellar trama regular	 128
126a.	(125) Lamellae thick, distant (space between lamellae > four times thickness of lamella), often waxy; spores elongate without germ pore; cystidia present, usually large and encrusted; cap mostly viscid	*Gomphidius*
126b.	Lamellae thin, crowded (space between lamellae < four times thickness of lamella), not waxy, >< anastomosing; cap rarely viscid	 127
127a.	(126) Lamellae readily separating from flesh; cystidia often present, not encrusted; spores not elongate	*Paxillus*
127b.	Lamellae not readily separating from flesh; cystidia present, often encrusted; spores elongate; cap cuticle turns blue with ammonia	*Phylloporus*
128a.	(125) Cap mostly conical, generally radially fibrillose or splitting; cystidia striking, *either* thick-walled and with crystal coated apex *or* thin-walled, naked, cylindric; spores ovoid, without germ pore	*Inocybe*
128b.	Cap mostly convex, not radially fibrillose; cystidia not striking	 129
129a.	(128, 141) Spores not truncate and without prominent germ pore	 130
129b.	Spores truncate or with red line at junction of wall layers when mounted in KOH	 131
130a.	(129) Spores thin-walled, often collapsing in water, >< hyaline *sub. micr.*	*Tubaria*
130b.	Spores firm-walled, not collapsing, coloured *sub. micr.*, without reddish line at junction of wall layers when mounted	

	in KOH; *either* cap scaly *and/or* chrysocystidia present *and/or* spores non-ovoid	*Pholiota*
131a.	(129) Chrysocystidia absent; spores truncate, with prominent germ pore	 120
131b.	Chrysocystidia present; spore print some shade of grey-brown; spores mounted in KOH show reddish line at junction of wall layers	 141
132a.	(117) Spores angular, nodulose, clay-brown or cigar-brown	*Inocybe*
132b.	Spores spiny or warted, but not nodulose	 133
133a.	(132) Spore wall punctate due to embedded spines	*Tubaria*
133b.	Spore wall with true spines or warts	 134
134a.	(133) Spores rust-brown	 135
134b.	Spores clay-brown or cigar-brown	 137
135a.	(134) Cystidia typically absent (when present, >< globose, thin-walled); veil cobweblike; spores rough-warted	*Cortinarius*
135b.	Cystidia typically present, not globose	 136
136a.	(135) Fruit body bright coloured, often on wood; cap >< convex; veil present or absent (always on wood when present); clamp connections present; spores without plage	*Gymnopilus*
136b.	Fruit body mostly not bright coloured; cap conic to hemispherical, normally striate; lamellae ascending; mostly on the ground; clamp connections present; spores with plage (rarely without plage, but then clamp connections absent)	*Galerina*
137a.	(134) Cap often large (diameter usually > 3 cm), viscid; spores without germ pore; cystidia present; cap cuticle normal filamentous, without cystidia	*Hebeloma*
137b.	Cap usually small, (diameter usually < 3 cm) dry; spores without germ pore; cystidia present; cap cuticle >< a layer of cystidia or >< cellular	*Alnicola*
138a.	(28) Cap and stipe readily separable; lamellae free; spores cocoa-brown to purple-brown; annulus present	*Agaricus*
138b.	Fruit body otherwise	 139
139a.	(138) Fruit body normally autodigesting; lamellae parallel-sided; spores black or rarely chocolate	*Coprinus*
139b.	Fruit body not autodigesting	 140
140a.	(139) Cuticle filamentous; spores deep brown to violet; fruit body not very fragile	 141

140b.	Cuticle cellular; spores black or deep brown; fruit body fragile	 144
141a.	(140, 109, 119, 131) Spores drab-brown to blackish-violet, often non-ovoid; spores *sub. micr.* in KOH greyish or with a reddish line at the junction of the wall layers	 142
141b.	Spores yellow-brown to deep rust-brown or grey rust-brown, rarely non-ovoid; spores *sub. micr.* in KOH yellow-brown, without a reddish line at the junction of the wall layers	 129
142a.	(141) Sub-cuticular layer of cap sub-cellular; cap typically dry, with no separable pellicle; chrysocystidia always present; often tufted and on wood; veil cobweb-like, rarely annulate; lamellar trama regular, of narrow hyphae (rarely also with a central strand of swolllen cells)	*Naematoloma*
142b.	Sub-cuticular layer of cap not sub-cellular; cuticle typically a separable pellicle; chrysocystidia present or absent	 143
143a.	(142) Chrysocystidia normally present (where absent, stipe with glutinous covering); annulus present (may be fugacious); lamellar trama of interwoven hyphae of unequal diameter	*Stropharia*
143b.	Chrysocystidia absent; veil mostly sparse or absent; lamellar trama sub-regular	*Psilocybe*
144a.	(140) Spores discolouring to a grey colour (*sub. micr.*) in conc. H_2SO_4; lamellae not mottled; spores smooth (rarely rough)	 145
144b.	Spores not discolouring in conc. H_2SO_4 (*sub. micr.*); lamellae mottled; spores smooth or rough	 146
145a.	(144) Cap smooth; hymenium without pseudoparaphyses; stem white	*Psathyrella*
145b.	Cap pleated, grooved; hymenium with pseudoparaphyses	*Coprinus*
146a.	(144) Spores smooth	*Panaeolus*
146b.	Spores rough	*Panaeolina*
147a.	(1) Spores smooth, white or coloured	 148
147b.	Spores rough, black, or nearly so	 159
148a.	(147) Spores white	 149
148b.	Spores yellow, pink, fawn, brown, olivaceous or black	 150
149a.	(148) Fruit body fragile, white; spores ellipsoid to sub-globose, amyloid	*Filoboletus*

149b.	Fruit body fleshy to somewhat tough; surface of cap buff to brown; spores cylindric, non-amyloid	*Polyporus arcularius** (Polyporaceae)
150a.	(148) Spores not black	 151
150b.	Spores black and *either* very large *or* with a very thick wall	 159
151a.	(150) Clamp connections present and easily found; spores short	 152
151b.	Clamp connections absent, sparse or present (when present, spores elongate and tubes arranged radially)	 153
152a.	(151) Tubes >< free around the apex of the stipe; spores yellow	*Gyroporus*
152b.	Tubes >< decurrent; spores brown to olive-brown	*Gyrodon*
153a.	(151) *Either* pores arranged radially *or* fruit body entirely red to pink	*Suillus*
153b.	Fruit body with none of the above characters	 154
154a.	(153) Spores ferruginous-brown, fawn or pink; flesh never blueing	*Tylopilus*
154b.	Spores olivaceous-brown	 155
155a.	(154) Stipe scabrous from squamules which are white at first, but soon discolour black or brown; stipe rarely cylindric or ventricose; pores never red	*Leccinum*
155b.	Stipe not scabrous	 156
156a.	(155) Veil pulverulent to arachnoid, sulphur yellow	*Pulveroboletus*
156b.	Veil otherwise	 157
157a.	(156) Cap viscid; cuticle not cellular	*Pulveroboletus*
157b.	Cap viscid or dry, when viscid, cuticle >< cellular	 158
158a.	(157) Stipe reticulate *and/or* tubes red at first; tube trama with strongly divergent hyphae which are much paler than the central tissue	*Boletus*
158b.	Stipe not as above; tube trama with slightly divergent hyphae which are only a little paler than the central tissue	*Xerocomus*
159a.	(147, 150) Spores globose to subglobose; cap woolly or warted; spores almost black	*Strobilomyces*
159b.	Spores elongate	 160
160a.	(159) Spores with embedded spines or pegs (occasionally smooth); young tubes white to pale grey; spores red-brown to dark-brown	*Porphyrellus*

* This is not a true agaric, but it is included because of superficial similarity which might cause it to be confused with this group.

160b. Spores with longitudinal ridges (occasionally with embedded spines or smooth); young tubes yellow; spores almost black *Boletellus*

Alphabetical List of Genera

AGARICUS L. *ex* Fr., *Syst. mycol.* 1: 8. 1821.
AGROCYBE Fayod in *Ann. Sci. nat. (Bot.)* VII 9: 358. 1889.
ALNICOLA Kuhner in *Botaniste* 17: 175. 1926.
AMANITA Pers. *ex* Hook., *Fl. scot.* 2: 19. 1821.
ANTHRACOPHYLLUM Ces. in *Atti Accad. Sci. fis. mat. Napoli* 8 (3): 3. 1879.
ARMILLARIA (Fr.) Kummer, *Führ. Pilzk.* 25, 134. 1871.
BOLBITIUS Fr., *Epicr.* 253. 1838.
BOLETELLUS Murr. in *Mycologia* 1: 9. 1909.
BOLETUS Dill. *ex* Fr., *Syst. mycol.* 1: 385. 1821.
CALOCYBE Kuhner in *Bull. mens. Soc. linn. Lyon* 7: 211. 1938.
CAMAROPHYLLUS (Fr.) Kummer, *Führ. Pilzk.* 26, 117. 1871.
CANTHARELLUS Adans. *ex* Fr., *Syst. mycol.* 1: 316. 1821.
CHAETOCALATHUS Sing. in *Lilloa* 8: 518. 1942.
CHAMAEOTA (W. G. Smith) Earle in *Bull. New York bot. Gdn* 5: 446. 1909.
CHLOROPHYLLUM Massee in *Kew Bull.* 1898: 136.
CLITOCYBE (Fr.) Kummer, *Führ. Pilzk.* 26, 119. 1871.
CLITOCYBULA (Sing.) Metrod in *Rev. Mycol.* 17: 67, 74. 1952.
CLITOPILUS (Fr.) Kummer, *Führ. Pilzk.* 23, 96. 1871.
COLLYBIA (Fr.) Kummer, *Führ. Pilzk.* 26, 113. 1871.
CONOCYBE Fayod in *Ann. Sci. nat. (Bot.)* VII 9: 357. 1889.
COPRINUS (Pers. *ex* Fr.) S. F. Gray, *Nat. Arrang. Brit. Pl.* 1: 632. 1821.
CORTINARIUS Fr., *Gen. Hymen.* 8. 1836.
CREPIDOTUS (Fr.) Kummer, *Führ. Pilzk.* 21, 74. 1871.
CRINIPELLIS Pat. in *J. Bot. Paris* 3: 336. 1889.
CYPTOTRAMA Sing. in *Lilloa* 30: 375. 1960.
CYSTODERMA Fayod in *Ann. Sci. nat. (Bot.)* VII 9: 350. 1889
DELICATULA Fayod in *Ann. Sci. nat. (Bot.)* VII 9: 313. 1889.
DESCOLEA Sing. in *Lilloa* 23: 256. 1950.
FAYODIA Kuhner in *Bull. mens. Soc. linn. Lyon* 9: 68. 1930.
FILOBOLETUS Henn. in Warb., *Monsunia* 1: 146. 1899.
FLAMMULINA Karst. in *Medd. Soc. Fauna Fl. fenn.* 18: 62. 1891.
GALERINA Earle in *Bull. New York bot. Gdn* 5: 423. 1909.
GOMPHIDIUS Fr., *Fl. scan.* 339. 1835.
GYMNOPILUS Karst. in *Bidr. Kann. Finl. Nat. Folk* 32: 400. 1879.
GYRODON Opat. in *Arch. Naturgesch.* 2 (1): 5. 1836.
GYROPORUS Quél., *Ench. Fung.* 161. 1886.
HEBELOMA (Fr.) Kummer, *Führ. Pilzk.* 22, 80. 1871.
HEBELOMINA Maire in *Bull. Soc. Hist. nat. Afr. Nord.* 16: 14. 1935.
HEMIMYCENA (Sing.) Sing. in *Rev. Mycol.* 3: 194, 196. 1938.
HOHENBUEHELIA Schulzer *apud* Schulzer, Kanitz & Knapp in *Verh. zool-bot. Ges. Wien* 16 (*Abhand.*) 45. 1866.
HYGROCYBE (Fr.) Kummer, *Führ. Pilzk.* 26, 111. 1871.
HYGROPHOROPSIS (J. Schroet. *apud* Cohn) Maire *apud* E. Martin-Sans, *Empois. Champ.* 99. 1921.

HYGROPHORUS Fr., *Fl. scan.* 339. 1835.
INOCYBE (Fr.) Fr., *Monogr. Hym. Suec.* 2: 346. 1863.
KUEHNEROMYCES Sing. & Smith in *Mycologia* 38: 504. 1946.
LACCARIA Berk. & Br. in *Ann. Mag. nat. Hist.* V 12: 370. 1883.
LACTARIUS DC. *ex* S. F. Gray, *Nat. Arrang. Brit. Pl.* 1: 623. 1821.
LACTOCOLLYBIA Sing. in *Schweiz. Z. Pilzk.* 17: 71. 1939.
LECCINUM S. F. Gray, *Nat. Arrang. Brit. Pl.* 1: 646. 1821.
LENTINELLUS Karst. in *Bidr. Kann. Finl. Nat. Folk* 32: 246. 1879.
LENTINUS Fr., *Syst. Orb. veg.* 77. 1825.
LEPIOTA (Pers. *ex* Fr.) S. F. Gray, *Nat Arrang. Brit. Pl.* 1: 601. 1821.
LEPISTA (Fr.) W. G. Smith in *J. Bot.*, Lond. 8: 248. 1870.
LEUCOAGARICUS (Locquin) Sing. in *Sydowia* 2: 35. 1948.
LEUCOCOPRINUS Pat. *J. Bot. Paris* 2: 16. 1888.
LEUCOPAXILLUS Boursier in *Bull. Soc. mycol. France* 41: 393. 1925.
LIMACELLA Earle in *Bull. New York bot. Gdn* 5: 447. 1909.
LYOPHYLLUM Karst. in *Acta Soc. Fauna Fl. Fenn.* 2 (1): 3. 1881.
MACROCYSTIDIA Heim *ex* Josserand in *Bull. Soc. mycol. France* 49: 376. 1934.
MACROLEPIOTA Sing. in *Pap. Michigan Acad. Sci.* 32: 141. 1948.
MARASMIELLUS Murr. in *N. Amer. Fl.* 9: 243. 1915.
MARASMIUS Fr., *Fl. scan.* 339. 1835.
MELANOLEUCA Pat., *Cat. rais. Pl. cell. Tunisie* 22. 1897.
MELANOTUS Pat., *Essai taxon. Hym.* 175. 1900.
MICROMPHALE Nees *ex* S. F. Gray *em.* Sing., *Nat. Arrang. Brit. Pl.* 1: 621. 1821.
MYCENA (Pers. *ex* Fr.) S. F. Gray, *Nat. Arrang. Brit. Pl.* 1: 619. 1821.
NAEMATOLOMA Karst. in *Bidr. Kann. Finl. Nat. Folk* 32: 495. 1879.
NOTHOPANUS Sing. in *Mycologia* 36: 364. 1944.
OMPHALINA Quél., *Ench. Fung.* 42. 1886.
OMPHALOTUS Fayod in *Ann. Sci. nat.* (*Bot.*) VI 9: 338. 1889.
OUDEMANSIELLA Speg. in *An. Soc. cient. argent.* 12: 24. 1881.
PANAEOLINA Maire in *Treb. Mus. Ci. nat. Barcelona* 15 (Ser. bot. No. 2): 109. 1933.
PANAEOLUS (Fr.) Quel. in *Mem. Soc. Emul. Montbeliard* II 5: 151. 1872.
PANELLUS Karst. in *Bidr. Kann. Finl. Nat. Folk* 32: 96. 1879.
PANUS Fr., *Epicr.* 396. 1838.
PAXILLUS Fr., *Fl. scan.* 339. 1835.
PHAEOMARASMIUS Scherffel in *Hedwigia* 36: 289. 1897.
PHOLIOTA (Fr.) Kummer, *Führ. Pilzk.* 22, 83. 1871.
PHOLIOTINA Fayod in *Ann. Sci. nat.* (*Bot.*) VII 9: 359. 1889.
PHYLLOPORUS Quél., *Fl. mycol. France* 409. 1888.
PLEUROTUS (Fr.) Kummer, *Führ. Pilzk.* 24, 104. 1871.
PLUTEUS Fr., *Fl. scan.* 338. 1835.
PORPHYRELLUS Gilbert, *Bolets* 75, 99. 1931.
PSATHYRELLA (Fr.) Quél. in *Mem. Soc. Emul. Montbeliard* II 5: 152. 1872.
PSEUDOBAEOSPORA Sing. in *Lloydia* 5: 129. 1942.
PSEUDOHIATULA (Sing.) Sing. in *Notula syst. Sect. crypt. Inst. bot. Acad. USSR* 4 (10-12): 8. 1938.
PSILOCYBE (Fr.) Kummer, *Führ. Pilzk.* 21, 71. 1871.
PULVEROBOLETUS Murr. in *Mycologia* 1: 9. 1909.
RESUPINATUS Nees *ex* S. F. Gray, *Nat. Arrang. Brit. Pl.* 1: 617. 1821.
RHODOCYBE Maire in *Bull. Soc. mycol. France* 40: 298. 1926.
RHODOPHYLLUS Quél., *Ench. Fung.* 57. 1886.
ROZITES Karst. in *Bidr. Kann. Finl. Nat. Folk* 32: 290. 1879.

RUSSULA (Pers. *ex* Fr.) S. F. Gray, *Nat. Arrang. Brit. Pl.* 1: 618. 1821.
SCHIZOPHYLLUM Fr., *Syst. mycol.* 1: 330. 1821.
SIMOCYBE Karst. in *Bidr. Kann. Finl. Nat. Folk* 32: 416. 1879.
STROBILOMYCES Berk. in *Hook. J. Bot.* II 3: 78. 1851.
STROPHARIA (Fr.) Quél. in *Mem. Soc. Emul. Montbeliard* II 5: 141. 1872.
SUILLUS Micheli *ex* S. F. Gray, *Nat. Arrang. Brit. Pl.* 1: 646. 1821.
TRICHOLOMA (Fr.) Kummer, *Führ. Pilzk.* 25, 129. 1871.
TRICHOLOMOPSIS Sing. in *Schweiz. Z. Pilzk.* 17: 56. 1939.
TUBARIA (W. G. Smith) Gillet, *Champ. France, Hym.* 537. 1876.
TYLOPILUS Karst. in *Rev. mycol.* 3 (9): 16. 1881.
VOLVARIELLA Speg. in *Anal. Mus. nac. Buenos Aires* 6: 119. 1899.
XEROCOMUS Quél. in Moug. & Ferry, *Champ.* in Louis, *Dep. Vosges, Fl. Vosges* 477. 1887.
XEROMPHALINA Kühn. & Maire in Konr. & Maubl., *Ic. Sel. Fung.* 6: 236. 1934; 6: 283. 1935.

Acknowledgements

Grateful acknowledgement is made to Mr. J. T. Waterhouse for helpful discussion on the manuscript.

References

Dennis, R. W. G., Orton, P. D. and Hora, F. B., 1960. — New Check List of British Agarics and Boleti — *Trans. Brit. Mycol. Soc.*, 43, Supplement: 1-225.
Singer, R., 1975. — *The Agaricales in Modern Taxonomy.* 3rd Edit. Vaduz: Cramer.